

Notice of Allowability

| Application No. | Applicant(s) |
|-----------------|--------------|
| 10/701,206 | CHEN, YUQI |
| Examiner | Art Unit |
| Jason Proctor | 2123 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to Filing of application on 4 November 2003.
2. The allowed claim(s) is/are 1-19.
3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All
 - b) Some*
 - c) None of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 11/4/03
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application
6. Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other _____.

Allowance

Claims 1-19 are allowed.

Claim Interpretation

MPEP 2111 instructs that:

The Patent and Trademark Office (“PTO”) determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction “in light of the specification as it would be interpreted by one of ordinary skill in the art.” *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364[, 70 USPQ2d 1827] (Fed. Cir. 2004).

In the claims, the term R_{wheel} denotes the radius of the blower wheel, as per the specification at paragraph 0017.

The phrase “provides the best blower performance” denotes “the best blower performance including evaluation of *CFM* and power consumption parameters” as per the specification at paragraph 0023.

The term *CFM* denotes the well-known abbreviation for “cubic feet per minute”.

The phrase “optimal blower performance” denotes “the best blower performance including evaluation of *CFM* and power consumption parameters” as per the specification at paragraph 0023.

The phrase *CFD* denotes the well-known abbreviation for “computational fluid dynamics”.

35 U.S.C. § 101 – Statutory Subject Matter

MPEP 2106 instructs that:

The subject matter courts have found to be outside >of, or exceptions to,< the four statutory categories of invention is limited to abstract ideas, laws of nature and natural phenomena. While this is easily stated, determining whether an applicant is seeking to patent an abstract idea, a law of nature or a natural phenomenon has proven to be challenging. These three exclusions recognize that subject matter that is not a practical application or use of an idea, a law of nature or a natural phenomenon is not patentable. See, e.g., *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498, 507 (1874) (“idea of itself is not patentable, but a new device by which it may be made practically useful is”); *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94, 40 USPQ 199, 202 (1939) (“While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.”); *Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759 (“steps of locating’ a medial axis, and creating’ a bubble hierarchy . . . describe nothing more than the manipulation of basic mathematical constructs, the paradigmatic abstract idea”).

The claims in this application recite a methods for “determining the shape of a scroll cage for a forward-curved centrifugal blower wheel,” “determining the shape of a scroll cage of a blower housing [...] for a forward-curved centrifugal blower wheel,” and “determining the shape of a scroll cage of a blower housing [...] for a forward-curved centrifugal blower wheel.” The concluding step of these methods are to “plot the scroll cage profile on polar coordinates,” producing a plot such as, for example, FIG. 4A (specification, paragraph 0012).

The claimed subject matter does not fall into any of the judicial exceptions to patentable subject matter because it is clearly not a law of nature or natural phenomena. The method is not an abstract idea, or a mere mathematical algorithm, because each of the parameters manipulated by the recited steps is a direct representation of a real-world tangible measurement. (Ex. “blower wheel dimensions” *claim 1, line 3*)

Further, the result of the mathematical manipulation is a plot of the “scroll cage profile” produced according to an equation composed of the real-world tangible measurements (*See claim 1, lines 15-17*). This plot is not merely an abstract mathematical result, but rather directly represents the “shape of a scroll cage” which “can be converted to a blower housing design as will be readily understood by those skilled in the art” (specification, paragraph 0026). The claimed methods therefore have a recognized practical application.

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Lastly, the claimed methods produce a tangible result by recitation of “plotting the scroll cage profile on polar coordinates.” Persons of skill in the art would recognize the claimed equations for the profile as defining the profile in the abstract, however “plotting” the profile denotes a step of literally producing that profile for display, transmission, or storage. It would be unreasonable to hold that a step of “plotting” produces an abstract, intangible result.

For these reasons the Examiner finds the claimed subject matter within the scope of 35 U.S.C. § 101.

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Bob Rice (26,574) on 27 November 2006.

The application has been amended as follows:

Claim 1, line 7, the phrase “the blower wheel to the discharge point” was changed to –the blower wheel to a discharge point–.

Claim 9, line 6, the phrase “based on the room air” was changed to –based on room air–.

Claim 14, line 5, the phrase “at the design blower” was changed to –at a design blower–.

Claim 16, line 6, the phrase “based on the room air” was changed to –based on room air–.

Claim 18, line 5, the phrase “at the design blower” was changed to –at a design blower–.

Reasons for Allowance

2. The following is an examiner’s statement of reasons for allowance:

A thorough search of the prior art reveals that the field of scroll cage housing design is a crowded art comprising many variations of the apparatus (*US Patent No. 6,050,772; US Patent No. 5,813,834; US Patent No. 6,478,538; US Patent No. 6,439,839; US Patent No. 6,146,092 are exemplary*). The non-patent literature teaches concepts related to the design of a scroll cage in general (*Konieczny et al., Kind et al., “Squirrel Cage Blower” by Fluent Inc., and “Flow Modeling Solutions for Fan Design” by Fluent Inc. are exemplary*).

Although an apparatus that could be designed using the claimed method may be found in the prior art, that apparatus does not reasonably suggest the particular *claimed* method of design. Although concepts related to the design of scroll cages are taught in the prior art, these teachings do not reasonably teach the *claimed* sequence of steps for the particular resulting design. Thus, although it would be proper to conclude that the broad, generic concept of designing a scroll cage housing would be obvious, there exists no teaching in the prior art of record that would lead a person of ordinary skill in the art to arrive at the *claimed method*.

Therefore, the expressly recited instructions in claims 1, 5, 9, and 16 to “determine,” “calculate,” “select,” and “plot” the several parameters according to the several equations defines over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason Proctor
Examiner
Art Unit 2123

[Signature] 11/26/06
PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100